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of the
Jet Propulsion Laboratory
Fiscal Year 1965**

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**JET PROPULSION LABORATORY
CALIFORNIA INSTITUTE OF TECHNOLOGY
PASADENA, CALIFORNIA**

July 1, 1966

*Research and Advanced Development Publications
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Jet Propulsion Laboratory
Fiscal Year 1965*

*Prepared by
Office of Research and Advanced Development*

Approved:



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JET PROPULSION LABORATORY
CALIFORNIA INSTITUTE OF TECHNOLOGY
PASADENA, CALIFORNIA

July 1, 1966

The following tables present a quantitative analysis of JPL research and advanced development publications in FY-65. Publications are presented by category, by NASA funding offices, and by subprograms in these offices. A total of 864 publications resulted from JPL R&AD efforts during the fiscal year. A list of JPL R&AD publications in the open literature during FY-65 is appended.

Table 1. FY-65 JPL R & AD Publications by NASA Funding Offices

Type of Publication	NASA Funding Office			Total
	OSSA	OART	OTDA (150) ⁵	
Presentations at Meetings, Symposia, etc. ¹	16	109	19	144
Papers in Open Literature ²	30	82	21	133
Technical Reports ³	26	97	13	136
Technical Memorandums ³	9	11	1	21
Space Programs Summary (SPS) Contributions ⁴	71	265	94	430
TOTAL	152	564	148	<u><u>864</u></u>

¹ For titles of papers presented, refer to JPL First and Second Quarter R & AD Reviews, FY-65, and JPL Technical Memorandum 33-243.

² See appended listing.

³ For titles, authors, document numbers, and dates, refer to JPL Bibliographies 39-6 and 39-7.

⁴ Refer to JPL Space Programs Summaries 37-28 through 37-33 Volume IV for titles and authors of articles.

⁵ This tabulation presents publications for the entire OTDA-funded R & AD effort at JPL.

Table 2. FY-65 JPL R & AD Publications by OSSA Subprograms

Subprograms OSSA	Type of Publication					TOTAL
	Presentations (Symposia, Mtgs.)	Papers in Open Lit.	Technical Reports	Technical Memos	SPS Contributions	
Science (185)	4	20	10	4	12	50
Advanced Technical Development (186)	3	1	9	5	21	39
Supporting Studies (187)	0	0	0	0	0	0
Advanced Studies (689)	0	0	0	0	5	5
Physics & Astronomy (188)	0	2	1	0	2	5
Sounding Rockets (879)	0	1	2	0	0	3
Bioscience (189)	8	6	4	0	29	47
Manned Space Sciences (190)	1	0	0	0	0	1
Manned Lunar Science (867)	0	0	0	0	2	2
TOTAL	16	30	26	9	71	<u>152</u>

Table 3. FY-65 JPL R & AD Publications by OART Subprograms

Subprograms OART	Type of Publication					TOTAL
	Presentations (Symposia, Mtgs.)	Papers in Open Lit.	Technical Reports	Technical Memos	SPS Contributions	
Nuclear Electric Systems (120)	3	3	2	0	12	20
Nuclear Rocket Propulsion (122)	0	0	2	0	4	6
Space Power (123)	4	0	0	0	19	23
Space Vehicle Systems (124)	15	4	11	7	38	75
Electronics Systems (125)	4	4	14	0	32	54
Human Factors (127)	0	0	0	0	0	0
Chemical Propulsion (128)	16	8	7	1	24	56
L/P Exp. Eng. & SP Exp. Motors (731)	0	0	1	0	18	19
Research Program (129)	67	63	60	3	118	311
TOTAL	109	82	97	11	265	<u>564</u>

JET PROPULSION LABORATORY
RESEARCH AND ADVANCED DEVELOPMENT
PUBLICATIONS IN THE OPEN LITERATURE
FY 1965*

1. Aller, L. H., D. J. Faulkner, and R. H. Norton, Photoelectric Spectrophotometry of Selected Southern Stars, *Astrophysical Journal*, Vol. 140, November 15, 1964, pp. 1609-1612.
2. Anderson, J. D., G. W. Null, and C. T. Thornton, The Evaluation of Certain Astronomical Constants from the Radio Tracking of Mariner II, *Progress in Astronautics and Aeronautics*, Vol. 14, Academic Press, Inc., 1964.
3. Arms, R. J., and F. R. Hama, Localized-Induction Concept on a Curved Vortex and Motion of an Elliptic Vortex Ring, *Physics of Fluids*, Vol. 8, No. 4, April 1965, pp. 553-559.
4. Ashkenas, H. I., and F. S. Sherman, The Structure and Utilization of Supersonic Free Jets in Low Density Wind Tunnels, 4th Symposium on Rarefied Gas Dynamics, Toronto, Ottawa, Canada, July 14-17, 1964. (1966)
5. Back, L. H., P. F. Massier, and H. L. Gier, Convective Heat Transfer in a Convergent-Divergent Nozzle, *International Journal of Heat Mass Transfer*, Vol. 7, No. 5, 1964, pp. 549-568.
6. Back, L. H., and A. B. Witte, Prediction of Test Transfer From Laminar Boundary Layers with Emphasis on Large Free-Stream Velocity Gradients and Highly Cooled Walls, ASME Paper No. 65-H-39.
7. Barth, C. A., Rocket Measurement of the Nitric Oxide Dayglow, *Journal of Geophysical Research*, Vol. 69, No. 15, August 1, 1964.
8. Barth, C. A., and J. B. Pearce, Rocket Measurement of the Photoelectron-Excited Ultraviolet Dayglow, *Space Research VI*, COSPAR, Buenos Aires, 1965.
9. Baumert, L. D., and M. Hall, Jr., A New Construction for Hadamard Matrices, *Bulletin of the American Mathematical Society*, Vol. 71, No. 1, January 1965, pp. 169-170.
10. Beaudet, R. A., Microwave Spectrum, Isomeric Form, Dipole Moment of 1, 1-Difluorobutadiene, *The Journal of Chemical Physics*, Vol. 42, No. 11, June 1, 1965, pp. 3758-3760.
11. Beaudet, R. A., The Stable Conformation of 1, 1, 4, 4-Tetrafluorobutadiene, *Journal of the American Chemical Society*, Vol. 87, No. 6, March 20, 1965, p. 1390.

*Considerably more papers were prepared, submitted, and accepted by the journals during the fiscal year; only those papers actually published have been listed.

12. Bentley, K. E., C. E. Giffin, D. G. Whitten, and W. F. Wilhite, Detection of Life-Related Compounds on Planetary Surfaces by Gas Chromatography-Mass Spectrometry Techniques, AAS Science and Technology Series, Vol. 2, 1964, pp. 93-117.
13. Berson, J. A., E. M. Evleth, Jr., and S. L. Manatt, Nitrogen Analogs of Sesquifulvalene Theoretical Correlation of Ground-State Properties, Journal of the American Chemical Society, Vol. 87, No. 13, July 5, 1965, pp. 2901-2907.
14. Broucke, R., Regularization of the Plane Restricted Three-Body Problem, Icarus, Vol. 4, No. 1, February 1965.
15. Cameron, R. E., F. A. Morelli, and G. B. Blank, Soil Algae Occurring in the Valley of 10,000 Smokes Desert, Alaska Transactions of the American Microscopic Society, Vol. 84 (1).
16. Carpenter, R. L., Study of Venus by CW Radar--Results of the 1964 Conjunction, The Astronomical Journal, Vol. 70, No. 2, March 1965, p. 134.
17. Chahine, M. T., Numerical Solution of the Complete Krook-Boltzmann Equation for Strong Shock Waves, Methods in Computational Physics, Vol. IV, Academic Press, 1965.
18. Chahine, M. T., H. W. Liepmann, and R. Narasimha, Theoretical and Experimental Aspects of the Shock Structure Problem, Proceedings of the 11th International Congress of Theoretical and Applied Mathematics, Munich, Germany, August 30 - September 5, 1964, Springer Verlag, Berlin, 1966.
19. Chahine, M. T., and R. Narasimha, Exact Numerical Solution of the Complete Bhatnagar-Gross-Krook Equation for Strong Shock Waves, Proceedings of the 4th Symposium on Rarefied Gas Dynamics, Academic Press, New York, 1965.
20. Childress, S., Slow Motion of a Sphere Through a Rotating, Viscous Fluid, Journal of Fluid Mechanics, Vol. 20, Part II, October 1964.
21. Christiansen, W., Seeded-Gas Plasma for Low Density Wind Tunnel Use, The Review of Scientific Instruments, Vol. 36, No. 1, January 1965.
22. Clauss, R. C., A 2388-Mc Two-Cavity Maser for Planetary Radar, Microwave Journal, Vol. 8, May 1965, pp. 74-77.
23. Clauss, R. C., W. Higa, C. Stelzried, and E. Wiebe, Total System Noise Temperature: 15°K, IEEE Transactions on Microwave Theory and Techniques, Vol. MTT-12, No. 6, November 1964.
24. Collins, D. J., and T. Horton, Experimental Convective Heat-Transfer Measurements, AIAA Journal, Vol. 2, No. 11, November 1964, pp. 2046-2047.
25. Cuddihy, E., J. Moacanin, and A. Rembaum, Some Unusual Properties of Graft Copolymers and Polyblends of β -Vinylnaphthalene and Ethylene Oxide, Journal of Applied Polymer Science, Vol. 9, No. 4, April 1965.

26. DeMore, W. B., and S. W. Benson, Gas Kinetics, Annual Review of Physical Chemistry, 1965.
27. Eisenberger, I., Genesis of Bimodal Distributions, Technometrics, Vol. 6, No. 4, November 1964.
28. Eisenberger, I., A Uniformly Most Powerful Test Using Quantiles, Notices of the American Mathematical Society, Vol. 12, No. 3, April 1965.
29. Eisenberger, I., and E. C. Posner, Systematic Statistics Used for Data Compression in Space Telemetry, Journal of American Statistical Association, Vol. 60, 1965.
30. Elleman, D. D., S. L. Manatt, and C. D. Pearce, Relative Signs of the Nuclear Spin Coupling Constants in Pyropylene Oxide and Indene Oxide, The Journal of Chemical Physics, Vol. 42, No. 2, January 15, 1965.
31. Elliot, D. G., DC Liquid-Metal Magnetohydrodynamic Power Generation, Proceedings of 6th Symposium on the Engineering Aspects of Magnetohydrodynamics, University of Pittsburg, Pittsburg, Pa., April 21-22, 1965.
32. Estabrook, F. B., and H. D. Wahlquist, Dyadic Analysis of Space-Time Congruences, Journal of Mathematical Physics, Vol. 5, No. 11, November 1964.
33. Evleth, E. M., Jr., J. A. Berson, and S. L. Manatt, Nitrogen Analogs of Sesquifulvalene III, Theoretical Correlation of Excited State Properties, Journal of the American Chemical Society, Vol. 87, No. 13, July 15, 1965, pp. 2908-2913.
34. Ewing, G. E., and S. Trajmar, Induced Infrared Absorption of Solutions of H_2 and D_2 in Liquid Neon, The Journal of Chemical Physics, Vol. 42, No. 11, June 1, 1965, pp. 4038-4046.
35. Fedors, R. F., and R. F. Landel, Statistical Variability of Ultimate Properties of SBR Gum Vulcanizates, Transactions of the Society of Rheology, Vol. 9, No. 1, 1965, pp. 195-218.
36. Fischbach, D. B., Comments on "Diamagnetic" Gaussmeter, The Review of Scientific Instruments, Vol. 36, No. 2, February 1965, pp. 241-243.
37. Golomb, S. W., and E. C. Posner, Rook Domains, Latin Squares, Affine Planes, and Error-Distribution Codes, IEEE Transactions on Information Theory, Vol. IT-10, No. 3, July 1964.
38. Gray, L. D., Spectral Emissivity Calculations for the Parallel Bands of Carbon Dioxide at 4.3 Microns, Journal of Quantitative Spectroscopy and Radiative Transfer, Vol. 5, 1965, pp. 569-583.
39. Gray, L. D., and S. S. Penner, Approximate Band Absorption Calculations for Methane, Journal of Quantitative Spectroscopy and Radiative Transfer, Vol. V, 1965.

40. Gray, L. D., and J. E. Selvidge, Relative Intensity Calculations for Carbon Dioxide, *Journal of Quantitative Spectroscopy and Radiative Transfer*, Vol. 5, No. 2, March-April 1965, pp. 291-301.
41. Green, A. E. S., and C. A. Barth, Calculations of Ultraviolet Molecular Nitrogen Emissions from the Aurora, *Journal of Geophysical Research*, Vol. 70, No. 5, March 1, 1965.
42. Harding, J. T., Drift Data for the Cryogenic Gyro, *International Advances in Cryogenic Engineering*, Vol. X, Plenum Press, New York, 1965, p. 137.
43. Hildebrandt, A. F., and M. M. Saffren, Superconducting Transition of a Rotating Superconductor--The Hollow Cylinder, *Proceedings of the IX International Conference on Low Temperature Physics*, September 1964.
44. Ingham, J. D., and N. A. Rapp, Polymer Degradation. II. Mechanism of Thermal Degradation of Polyoxypolypropylene Glycol-Toluene 2, 4-Diisocyanate Polymer (POPG-TDI) and a Block Polyether Glycol-TDI Polymer, *Journal of Polymer Science, Part A: General Papers*, Vol. 2, 1964.
45. Jaffe, L. D., Mechanical and Thermal Measurements on Simulated Lunar Surface Materials, *The Lunar Surface Layer*, Academic Press, Inc., 1964.
46. Jaffe, L. D., Problems in Sterilization of Unmanned Space Vehicles, *Life Sciences and Space Research II: Proceedings of the 4th International Space Science Symposium*, Warsaw, June 3-12, 1963, North-Holland Publishing Co., 1964, pp. 406-432.
47. Johnston, A. R., Linear Electro-Optic Effect in Tetragonal BaTiO₃, *Bull. Am. Phys. Soc.*, Vol. 10, 473, 1965.
48. Johnston, A. R., and J. M. Weingart, Determination of the Low-Frequency Linear Electro-Optic Effect in Tetragonal BaTiO₃, *Journal of the Optical Society of America*, Vol. 55, No. 7, July 1965, pp. 828-834.
49. Juvinal, G. L., σ-Bonded Alkyl Compounds of Niobium and Tantalum, Trimethyldichloroniobium and Trimethyldichlorotantalum, *Journal of the American Chemical Society*, Vol. 86, 1964.
50. Kelly, A. J., A Microwave Probe for Plasma Plumes, *AIAA Journal*, Vol. 3, No. 2, February 1965.
51. Kendall, W. B., Performance of the Biased Square-Law Sequential Detector in the Absence of Signal, *IEEE Trans. on Information Theory*, January 1965.
52. Kendall, W. B., The Probability Density Function for Phase-Difference Estimates Obtained from the Envelopes of the Sum and Difference of Two Sine Waves, *Proceedings of the IEEE*, Vol. 52, No. 9, September 1964.
53. Kendall, W. B., Unambiguous Accuracy of an Interferometer Angle-Measuring System, *IEEE Transactions on Space Electronics and Telemetry*, Vol. SET-11, No. 2, June 1965, pp. 62-70.

54. Kerrisk, D. J., State-of-the-Art of Electric Propulsion, Space Electronics Symposium, Vol. 6, American Astronautical Society, 1965.
55. Kerrisk, D. J., and T. D. Masek, Plasma Nonuniformity and Grid Erosion in an Electron Bombardment Ion Engine, AIAA Journal, Vol. 3, No. 6, June 1965, pp. 1060-1066.
56. Kizner, W., A High-Order Perturbation Theory Using Rectangular Coordinates, Progress in Astronautics and Aeronautics, Vol. 14, Academic Press, Inc., 1964.
57. Kizner, W., A Numerical Method for Finding Solutions of Nonlinear Equations, Journal of the Society for Industrial and Applied Mathematics, Vol. 12, No. 2, June 1964.
58. Kotlensky, W. V., Deformation in Pyrolytic Graphite, Transactions of the Metallurgical Society of AIME, Vol. 233, April 1965, pp. 830-832.
59. Kotlensky, W. V., and H. E. Martens, Structural and High Temperature Properties of Boron Pyrolytic Graphite, Carbon, Vol. 2, 1964, pp. 315-317.
60. Kotlensky, W. V., and H. E. Martens, Structural Changes Accompanying Deformation in Pyrolytic Graphite, Journal of Amer. Ceram. Soc., Vol. 18, 1965, pp. 135-138.
61. Kotlensky, W. V., and H. E. Martens, Tensile Properties of Glassy Carbon to 2,900 degrees C., Nature, Vol. 206, No. 4990, June 19, 1965, pp. 1241-1247.
62. Kovach, R. L., and R. E. Carr, Free Oscillations of the Moon and Observations by a Long-Period Seismograph System, Proceedings of the 13th International Astronautical Congress, Varna, Bulgaria, September 1962, Springer-Verlag, 1964, pp. 1-10.
63. Landel, R. F., and R. F. Fedors, The Tensile Failure Envelope of Amorphous Elastomers: Effects of Statistical Variability and Crosslink Density, Proceedings of the 4th International Congress of Rheology, Brown University, Providence, R.I., August 26-30, 1963, Interscience Publishing Co., New York, 1965, pp. 543-566.
64. Lardner, T. J., Stresses in a Thick Plate with Axially Symmetric Loading, The Journal of Applied Mechanics, Transactions of ASME, Series E, Vol. 32, No. 2, June 1965, pp. 458-459.
65. Laufer, J., Some Statistical Properties of the Pressure Field Radiated by a Turbulent Boundary Layer, The Physics of Fluids, Vol. 7, No. 8, August 1964.
66. Lindsey, W. C., Coding for Specular and Scatter Channels, IEEE Transactions on Communication Technology, Vol. COM-13, No. 2, June 1965, pp. 237-238.
67. Lindsey, W. C., Error Probabilities for Coherent Receivers in Specular and Random Channels, Trans. of PTG-IT, January 1965.

68. Lindsey, W. C., Error Probabilities for Ricean Fading Multichannel Reception of Binary and N-ary Signals, Trans. of PTG-IT, October 1964.
69. Lindsey, W. C., Infinite Integrals Containing Bessel Function Products, Journal of the Society for Industrial and Applied Mathematics, Vol. 12, No. 2, June 1964, pp. 458-464.
70. Lindsey, W. C., Coded Noncoherent Communications, IEEE Transactions on Space Electronics and Telemetry, Vol. SET-11, No. 1, March 1965, pp. 6-13.
71. Lindsey, W. C., Optimum Coherent Linear Demodulation, IEEE Transactions on Communication Technology, Vol. COM-13, No. 2, June 1965, pp. 183-190.
72. Lyttleton, R. A., On the Internal Structure of the Planet Mars, Monthly Notices of the Royal Astronomical Society, Vol. 129, No. 1, 1965, pp. 21-39.
73. Lyttleton, R. A., On the Phase-Change Hypothesis of the Structure of the Earth, Proceedings of the Royal Society, A, Vol. 287, 1965, pp. 471-493.
74. Mack, L. M., Computation of the Stability of the Laminar Boundary Layer, Methods of Computational Physics, Vol. IV, Academic Press, New York, 1965.
75. Manatt, S. L., D. D. Ellerman, and S. J. Brois, The Relative Signs of the Nuclear Magnetic Resonance Proton-Proton Coupling Constants in Styrene Sulfide and Styrenimine, Journal of the American Chemical Society, Vol. 87, No. 10, May 20, 1965, pp. 2220-2225.
76. Maxworthy, T., Accurate Measurements of Sphere Drag at Low Reynolds Numbers, Journal of Fluid Mechanics, Vol. 23, No. 2, 1965, pp. 396-373.
77. Maxworthy, T., An Experimental Determination of the Slow Motion of a Sphere in a Rotating, Viscous Fluid, Journal of Fluid Mechanics, Vol. 23, No. 2, 1965, pp. 373-384.
78. McClatchey, R. A., Infrared Heat Transfer by Atmospheric Water Vapor, Journal of Applied Meteorology, Vol. 3, No. 5, October 1964.
79. McDonald, D. G., The de Haas-van Alphen Effect in Niobium, Bull. Am. Phys. Soc., Vol. 10, 605, 1965.
80. Metzger, A. E., E. C. Anderson, M. A. van Dilla, and J. R. Arnold, Detection of an Interstellar Flux of Gamma-Rays, Nature, Vol. 204, No. 4960, November 21, 1964, pp. 766-767.
81. Moacanin, J., E. Cuddihy, and A. Rembaum, Compatibility and Plasticization of Poly- β -Vinylnaphthalene with Polyethylene Oxide, Advances in Chemistry Series, 1965.
82. Moacanin, J., and A. Rembaum, Kinetics of the Anionic Polymerization of Acenaphthylene, Journal of Polymer Science, Part B: Polymer Letters, Vol. 2, 1964.

83. Neugebauer, M., and C. W. Snyder, Solar Wind Measurements Near Venus, Journal of Geophysical Research, Vol. 70, No. 7, April 1, 1965.
84. Nielsen, T. H., and M. H. Leipold, Thermal Expansion of Nickel Oxide, Journal of the American Ceramic Society, Vol. 48, No. 3, March 1965, p. 164.
85. Patterson, J. H., A. L. Turkevich, and E. Franzgrote, Chemical Analysis of Surfaces Using Alpha Particles, Journal of Geophysical Research, Vol. 70, No. 6, March 15, 1965, pp. 1311-1327.
86. Pearce, J. B., and C. A. Barth, Rocket Measurements of the Ultraviolet Aurora, Transactions American Geophysical Union, Vol. 46, No. 60.
87. Pfeiffer, C. G., Guidance Analysis, Ch. 6 in Lunar Missions and Explorations (Leonides & Vance, editors), John Wiley & Sons, 1964.
88. Pfeiffer, C. G., Guidance of Unmanned Lunar and Interplanetary Spacecraft, Progress in Astronautics and Aeronautics, Vol. 14, Academic Press, Inc., 1964.
89. Pfeiffer, C. G., Space Navigation and Guidance, Contribution to Encyclopedia of Science and Technology, McGraw-Hill, 1965.
90. Powell, W. B., and T. W. Price, A Method for the Determination of Local Heat Flux From Transient Temperature Measurements, ISA Transactions, Vol. 3, No. 3, July 1964.
91. Rembaum, A., A. Eisenberg, and R. Haack, Equilibria Between Metallic Sodium and Aromatic Hydrocarbons, Journal of the American Chemical Society, Vol. 87, No. 10, May 20, 1965, pp. 2291-2292.
92. Rembaum, A., J. Moacanin, and H. Pohl, Polymeric Semiconductors, Progress in Dielectrics, Vol. 6, Heywood Publications, 1965.
93. Rumsey, H., Jr., and E. C. Posner, A Class of Exponential Equations, Proc. Amer. Math. Soc., December 1964.
94. Rumsey, H., Jr., and E. C. Posner, Joint Distributions with Prescribed Moments, Ann. Math. Stat., Vol. 36, 1965.
95. Runcorn, S. K., Satellite Gravity Measurements and a Laminar Viscous Flow Model of the Earth's Mantle, Journal of Geophysical Research, Vol. 69, No. 20, October 15, 1964, pp. 4389-4394.
96. Rupe, J. H., and D. D. Evans, Designing for Compatibility in High-Performance Liquid Propulsion Engines, Astronautics and Aeronautics, Vol. 3, No. 6, June 1965.
97. Russell, D. A., Electron-Beam Measurements of Shock Wave Thickness, Proc. 4th Symp. on Rarefied Gas Dynamics, Academic Press, 1964.

98. San Miguel, A., A Biaxial Tester, Bulletin of the Third Meeting of ICRPG Working Group on Mechanical Behavior, November 15, 1965, SPIA, The Johns Hopkins University, Applied Physics Laboratory, Silver Springs, Maryland.
99. San Miguel, A., and R. H. Silver, Radial Stress Measurements in Solid Propellant Grains, Bulletin of the Third Meeting of ICRPG, Working Group on Mechanical Behavior, November 15, 1964, SPIA, The Johns Hopkins University, Applied Physics Laboratory, Silver Springs, Maryland.
100. Sciama, D. W., On the Formation of Galaxies and Their Magnetic Fields in a Steady State Universe, Quarterly Journal of the Royal Astronomical Society, Vol. 5, September 1964, pp. 196-213.
101. Sehgal, R., and J. M. Wu, Thrust Vector Control by Liquid Injection into Rocket Nozzles, Journal of Spacecraft and Rockets, Vol. 1, No. 5, September-October 1964, pp. 545-551.
102. Shumate, M. S., Interferometric Determination of the Principal Refractive Indices of Barium Titanate Single Crystals, Applied Physics Letters, Vol. 5, No. 9, November 1, 1964, pp. 178-179.
103. Simha, R., J. D. Ingham, N. S. Rapp, and J. Hardy, Polymer Degradation III. Carbon-14 as a Tracer for Studies in the Thermal Degradation of Polyurethanes, Polymer Letters, Vol. 2, 1964.
104. Soffen, G. A., Limitations in Designing Life Detection Experiments, Advances in Astronautical Sciences, Vol. 19, 1965, p. 261.
105. Solomon, G., and J. J. Stiffler, Algebraically Punctured Cyclic Codes, Information and Control, Vol. 8, No. 2, April 1965, pp. 170-179.
106. Soong, T. T., On A Priori Statistics in Minimum-Variance Estimation Problems, Journal of Basic Engineering Transactions of the ASME, Series D., Vol. 87, No. 1, March 1965.
107. Speed, R., and A. Filice, Quartz Glass Pressure Vessels for Hydrothermal Studies, The American Mineralogist, Vol. 49, July-August 1964.
108. Speed, R. C., D. B. Nash, and N. L. Nickle, A Lunar X-Ray Diffraction Experiment, Advances in X-Ray Analysis, Vol. 8, Plenum Press, 1965, pp. 400-417.
109. Spinrad, H., and R. L. Newburn, Jr., A Low-Dispersion Spectroscopic Search for Water Vapor in Cool Stars, The Astrophysical Journal, Vol. 141, No. 3, April 1, 1965, pp. 965-975.
110. Stiffler, J. J., Comma-Free Error-Correcting Codes, IEEE Transactions on Information Theory, Vol. IT-11, No. 1, January 1965, pp. 107-112.
111. Tausworthe, R. C., A Precision Planetary Range-Tracking Radar, IEEE Transactions on Space Electronics and Telemetry, Vol. SET-11, No. 2, June 1965, pp. 78-85.

112. Tausworthe, R. C., Random Numbers Generated by Linear Recurrence Modulo Two, Mathematics of Computation, Vol. 19, No. 90, April 1965.
113. Titsworth, R. C., Equivalence Classes of Periodic Sequences, Illinois Journal of Mathematics, Vol. 8, No. 2, June 1964.
114. Trajamar, S., and G. E. Ewing, The Near-Ultraviolet Bands of MgO: Analysis of the D¹Δ - A₁π and C¹Σ⁻ -- A₁π Systems, Astrophysical Journal, Vol. 142, No. 1, July 1, 1965, pp. 77-83.
115. Trajamar, S., and D. J. McCaa, The (ν₁ + ν₃) Combination Band of Ozone, Journal of Molecular Spectroscopy, Vol. 14, No. 3, November 1964.
116. Tschuikow-Roux, E., Reaction Dwell Time and Cooling Rate in a Single-Pulse Shock Tube, The Physics of Fluids, Vol. 8, No. 5, May 1965, pp. 821-825.
117. Tschuikow-Roux, E., Thermal Decomposition of Fluoroform in a Single-Pulse Shock Tube, II. Pressure Dependence on Rate, Journal of Chemical Physics, Vol. 42, No. 10, May 15, 1965, pp. 3639-3642.
118. Tschuikow-Roux, E., and J. E. Marte, Thermal Decomposition of Fluoroform in a Single-Pulse Shock Tube, I., The Journal of Chemical Physics, Vol. 42, No. 6, March 15, 1965.
119. Vickers, M. J., Thermal Scale Modeling, Astronautics and Aeronautics, Vol. 3, May 1965, pp. 34-39.
120. Vickers, M., A. Fowle, and F. Gabron, Thermal Scale Modeling of Spacecraft: An Experimental Investigation, Proceedings of the AIAA Simulation and Testing Conference, November 1964.
121. Von Roos, O., Interaction of Very Intense Radiation Fields with Atomic Systems, The Physical Review, Vol. 135, No. 1A, July 6, 1964.
122. Von Weyssenhoff, H., and M. Papatoff, Validity and Limitations of the Gas Titration of Atomic Nitrogen with Nitric Oxide, The Journal of Physical Chemistry, Vol. 69, No. 5, May 1965, pp. 1756-1758.
123. Weetall, H. H., and N. Weliky, Immunoabsorbent for the Isolation of Purine-Specific Antibodies, Science, Vol. 148, No. 3674, May 28, 1965, pp. 1235-1237.
124. Weetall, H. H., and N. Weliky, New Cellulose Derivatives for the Isolation of Biologically Active Molecules, Nature, Vol. 204, No. 4961, November 28, 1964.
125. Weetall, H. H., N. Weliky, and S. P. Vango, Detection of Micro-Organisms in Soil by Their Catalytic Activity, Nature, Vol. 208, No. 4988, June 5, 1965, pp. 1019-1021.
126. Weliky, N., H. H. Weetall, P. V. Gilden, and D. H. Campbell, The Synthesis and Use of Some Insoluble Immunologically Specific Adsorbents, Immunochemistry, Vol. 1, Pergamon Press, 1964.

127. Wilson, T. A., Minimum Entropy Production as a Design Criterion for Breathing, *Experientia*, Vol. 20, No. 6, 1964, pp. 333-334.
128. Wilts, C. H., Quasistatic Properties of RIS Films of Oxidized Permalloy, *J. Appl. Phys.* 35, 2097, 1964.
129. Wolf, F., and T. Horton, Effect of Argon Addition on Shock-Layer Radiance of CO₂-N₂ Gas Mixtures, *AIAA Journal*, Vol. 2, No. 8, August 1964, pp. 1472-1474.
130. Wu, C. -S., High-Frequency Conductivity of a Plasma in Quasiequilibrium: I. Formulation of the General Theory, *The Physical Review*, Vol. 138, No. 1A, April 5, 1965, pp. A51-A57.
131. Wu, C. -S., Useful Operator in Plasma Kinetic Theory, *Journal of Mathematical Physics*, Vol. 5, No. 12, December 1964.
132. Wu, C. -S., E. H. Klevans, and J. R. Primack, Temperature Relaxation in a Fully Ionized Plasma, *The Physics of Fluids*, Vol. 8, No. 6, June 1965, pp. 1126-1133.
133. Younkin, R. L., and G. Münch, Wavelength Dependence of the Band Structures of Jupiter and of Saturn, *The Astronomical Journal*, Vol. 69, No. 8, October 1964, p. 565.